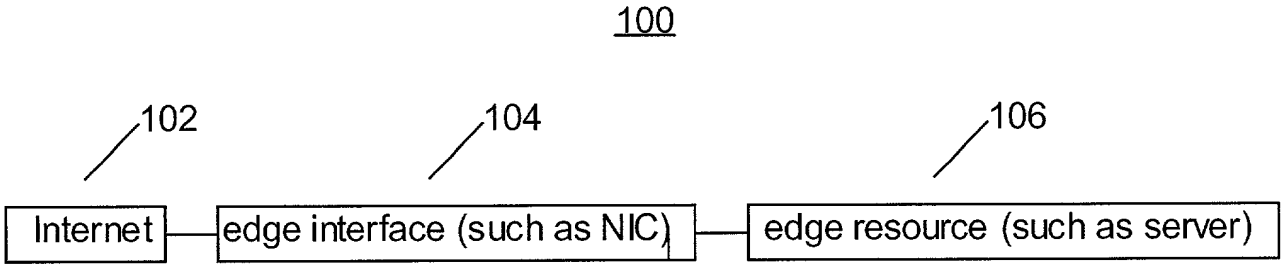
100
102
104
106
Internet
edge interface (such as NIC)
edge resource (such as server)

Fig. 1

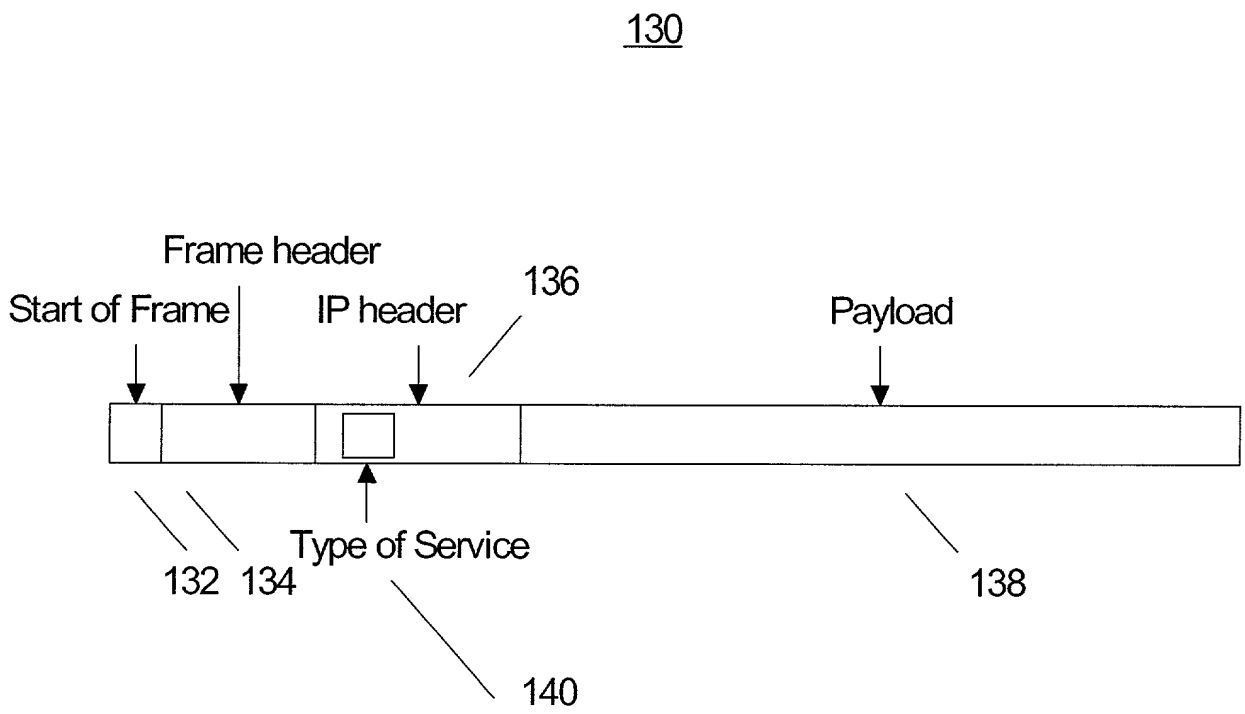
130
Frame header
Start of Frame
IP header
136
Payload
Type of Service
132
134
138
140

Fig. 2

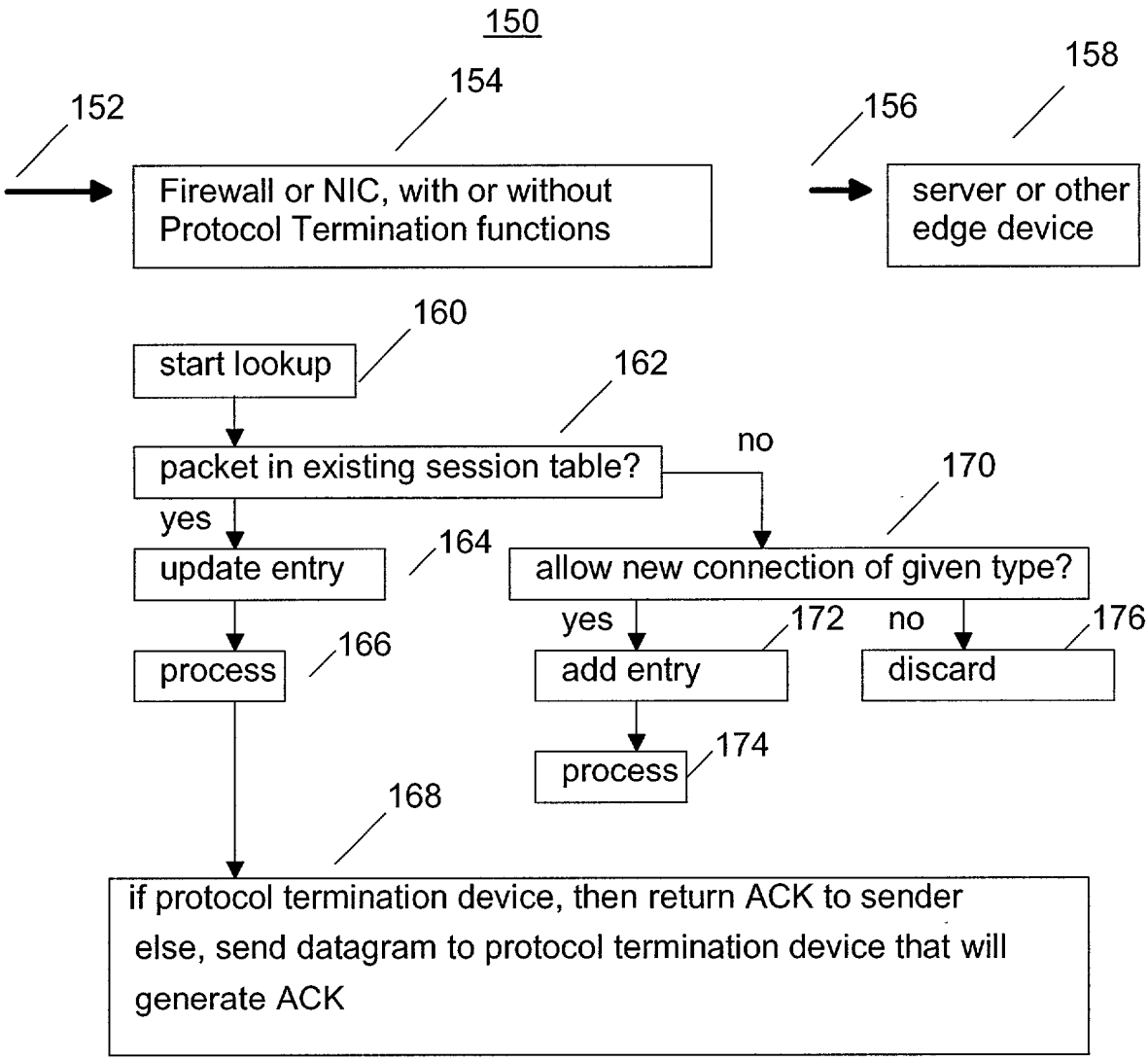
150
152
154
156
158
Firewall or NIC, with or without Protocol Termination functions
server or other edge device
160
start lookup
162
packet in existing session table?
no
170
yes
164
update entry
allow new connection of given type?
yes
172
no
176
166
process
add entry
discard
174
process
168
if protocol termination device, then return ACK to sender
else, send datagram to protocol termination device that will generate ACK

Fig. 3

200

low speed

Connection min and max values, pipe identifiers initialized in NIC

moderate speed

Current connection numbers and congestion signals collected and made available to algorithm

Algorithm refreshes probability of connection for different classes of service

high speed

New sessions request connections and connection decisions made

Fig. 4

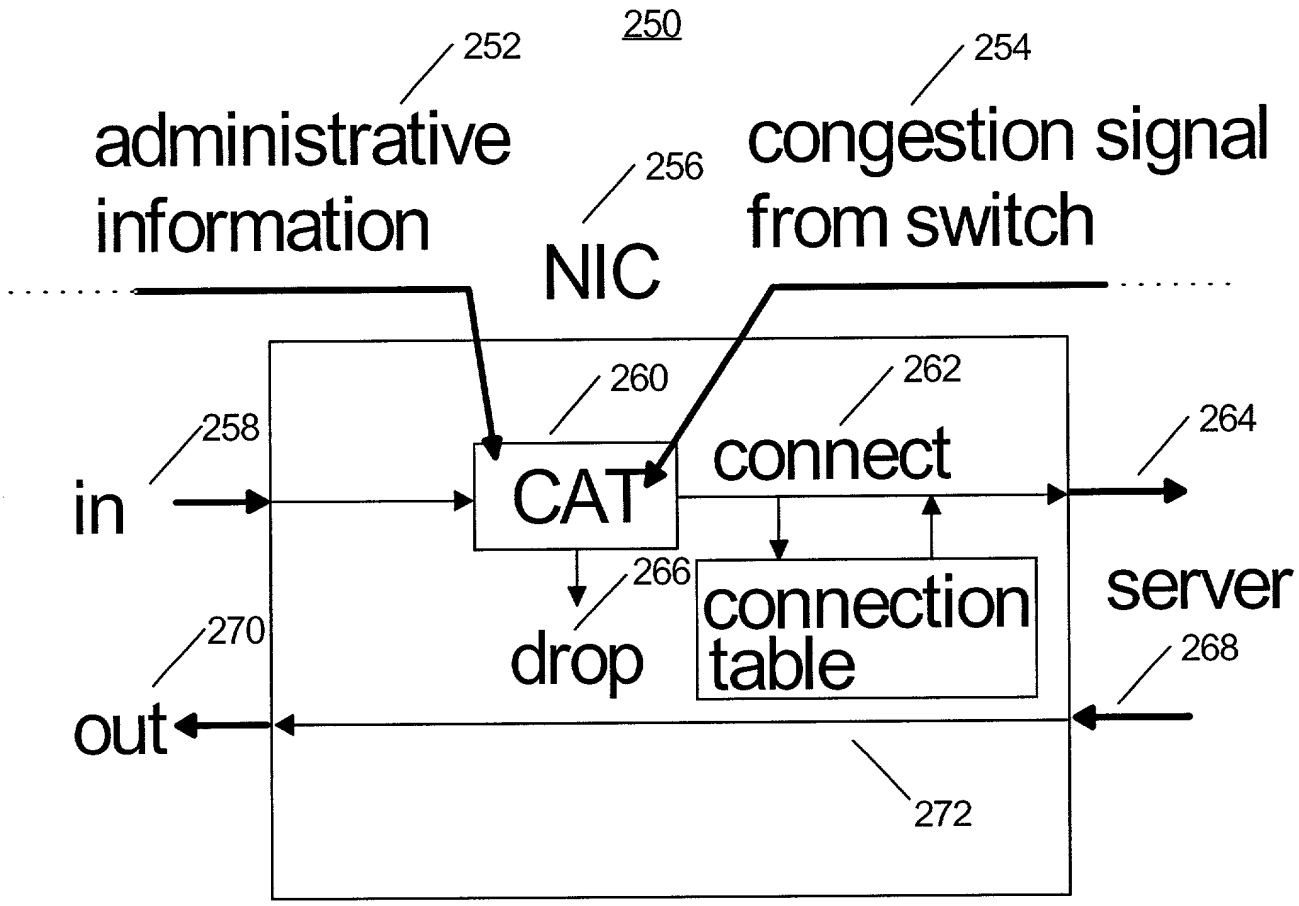
250
252
administrative information
254
congestion signal from switch
256
NIC
260
262
264
258
in
CAT
connect
266
connection table
server
drop
270
268
out
272

Fig. 5

300

1. min and max numbers of connections declared by administrator
2. coordinates of paths of traffic classes declared
3. paths using a common NIC source port collected in a set
4. Ci and Di coefficients computed for each pipe
5. Ci and Di entered in registers used in CAT calculation
6. congestion signals defined using path coordinates and resource limits

Fig. 6

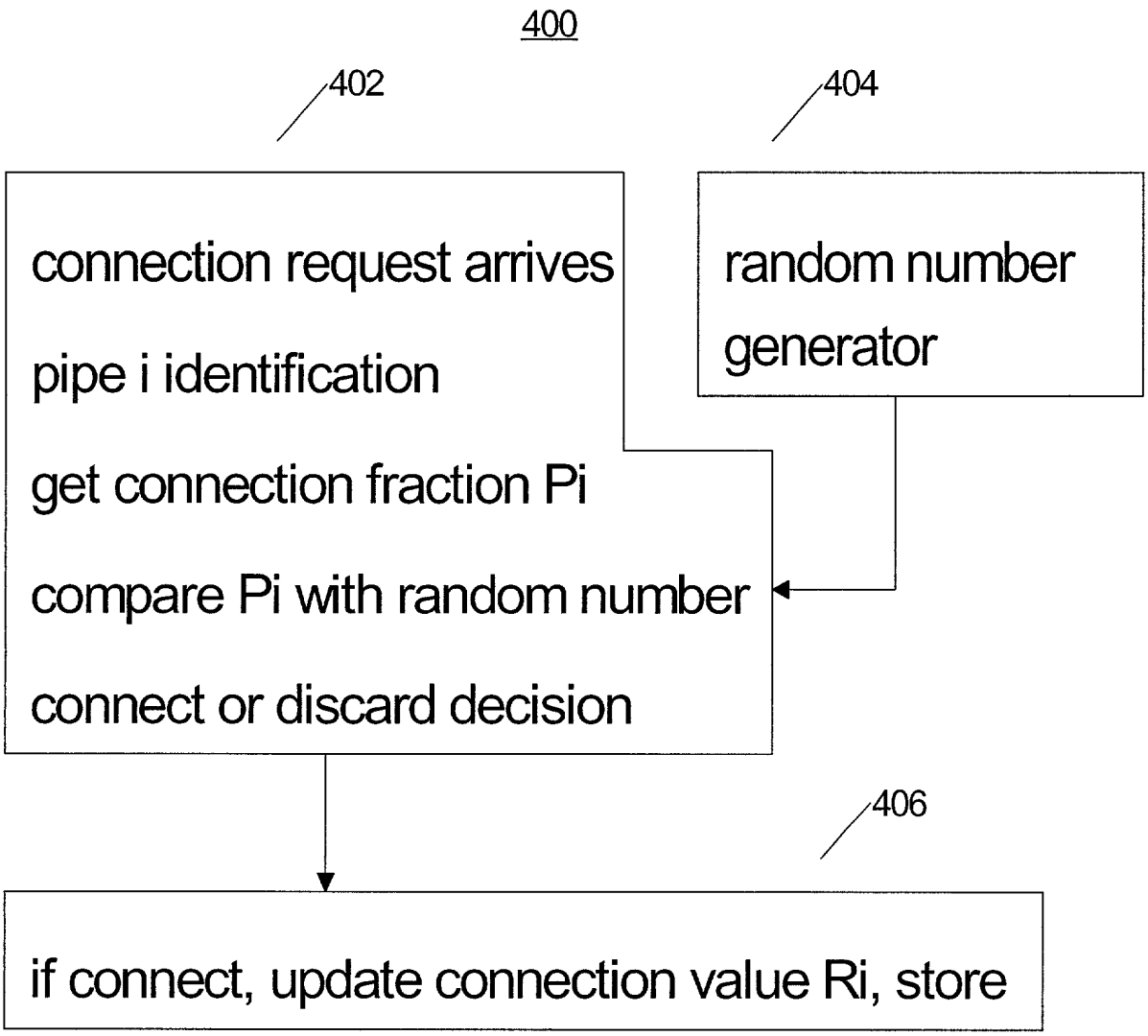
400
402
404
connection request arrives
pipe i identification
get connection fraction Pi
compare Pi with random number
connect or discard decision
random number generator
406
if connect, update connection value Ri, store

Fig. 7

450

# NIC with CAT
# Update connection probability table

Timer awakens program with period Dt

Fetch B, E values from registers

Update E and store

Fetch Ri, Ci, Di, Pi values from registers

Update Pi for each i and store in table of Pi values

Fig. 8

500

# CAT connection control refreshes connection fractions Pi for pipes

Timer with period Dt awakens CAT.

New connection fractions computed per pipe.

Results stored in a table.

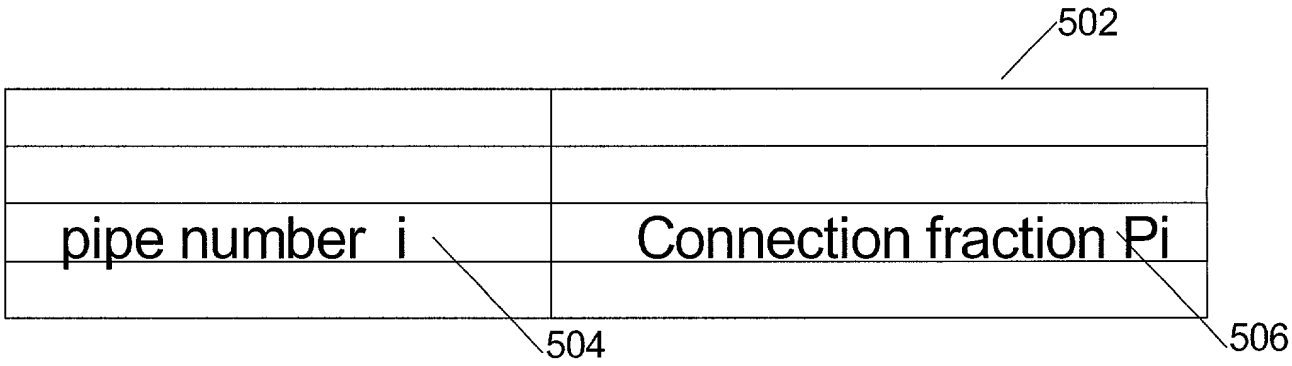


Fig. 9